

**CLAIMS:**

What is claimed is:

1. A method for encrypting and decrypting digital images comprising the steps of:

generating an encrypting transform with a cyclotomic polynomial;

partitioning said digital images into data blocks;

calculating encrypted data blocks with said encrypting transform and said data blocks;

transmitting said encrypted data blocks; and

calculating decrypted data blocks with the inverse of said encrypting transform and said encrypted data blocks.

2. The method of claim 1, wherein said generating step includes the step of determining a mathematical equation representing said encrypting transform, and said mathematical equation is said cyclotomic polynomial.

3. The method of claim 1, wherein said generating step includes the step of determining a mathematical equation representing said encrypting transform, and the coefficients of said mathematical equation are calculated with said cyclotomic polynomial.

4. The method of claim 1, wherein said generating step includes the step of determining a mathematical equation representing said encrypting transform, and said mathematical equation is modulus said cyclotomic polynomial.

5. The method of claim 2, wherein said digital images are color digital images.

6. The method of claim 3, wherein said digital images are color digital images.
7. The method of claim 4, wherein said digital images are color digital images.
8. The method of claim 5, wherein said color digital images comprise a set of images in digital cinema.
9. The method of claim 6, wherein said color digital images comprise a set of images in digital cinema.
10. The method of claim 7, wherein said color digital images comprise a set of images in digital cinema.
11. A method for encrypting and decrypting digital images comprising the steps of:
  - generating an encrypting transform with a radiometric expression;
  - partitioning said digital images into data blocks;
  - calculating encrypted data blocks with said encrypting transform and said data blocks;
  - transmitting said encrypted data blocks; and
  - calculating decrypted data blocks with the inverse of said encrypting transform and said encrypted data blocks.
12. The method of claim 11, wherein said generating step includes the step of calculating a base point with said radiometric expression.

13. The method of claim 12, wherein said digital images are color digital images.

14. The method of claim 13, wherein said color digital images comprise a set of images in digital cinema.

15. The method of claim 12, wherein said calculating base point step includes the steps of:

deriving a bitwise expression for said radiometric expression; and

converting said bitwise expression to a high precision integer.

16. The method of claim 15, wherein said digital images are color digital images.

17. The method of claim 16, wherein said color digital images comprise a set of images in digital cinema.

18. The method of claim 11, wherein said radiometric expression is substantially a black metamer.

19. The method of claim 11, wherein said radiometric expression is substantially a fundamental metamer.

20. The method of claim 11, wherein said radiometric expression is substantially a radiometric function.

21. A method for encrypting and decrypting digital images comprising the steps of:

generating an encrypting transform;

partitioning said digital images into data blocks;

calculating encrypted data blocks with said encrypting transform,  
said data blocks and a radiometric expression;

transmitting said encrypted data blocks; and

calculating decrypted data blocks with the inverse of said encrypting  
transform and said encrypted data blocks.

22. The method of claim 21, wherein said calculating encrypted data blocks  
step includes the step of combining said data blocks with said radiometric  
expression.

23. The method of claim 22, wherein said combining step includes the steps of:  
deriving a bitwise expression for said radiometric expression; and

combining said bitwise expression and said data blocks with an  
exclusive-or mathematical operation.

24. The method of claim 23, wherein said digital images are color digital images.

25. The method of claim 24, wherein said color digital images comprise a set  
of images in digital cinema.

23. The method of claim 21, wherein said radiometric expression is  
substantially a fundamental metamer.

24. The method of claim 21, wherein said radiometric expression is  
substantially a black metamer.

25. The method of claim 21, wherein said radiometric expression is substantially a radiometric function.